



The amplitude of the amplified audio signal can be adjusted by means of the mixing console. The mixing console is provided for operation by a sound engineer.

The sound engineer performs the adjustment of the amplitude in accordance with each situation on the stage which he observes in such a manner that the overall impression in the performance area, in particular in the public area, which is produced by audio signals radiated by all the loudspeakers, is complementary to the situation in the stage area. The amplified audio signal is supplied to each loudspeaker from the mixing console.

In addition, in the known installation a control of one or more spotlights is provided. The spotlight is disposed in the performance area in such a manner that it can throw a cone of light in a narrow dihedral angle in the stage area. The spotlight is rotatably mounted around a vertical axis and a horizontal axis and the dihedral angle that can be radiated can be adjusted by a lighting engineer. Depending on the situation in the stage area, for instance the position of an actor on the stage, the alignment of the spotlight is performed by the lighting engineer in such a manner, for instance, that the dihedral angle radiated from the spotlight hits the actor.

The known installation consequently requires the attentiveness of the staff operating the control unit, i.e. of the sound engineer at the mixing console and of the lighting engineer at the spotlight, so that the control of the loudspeakers and of the spotlight is performed according to the situation in the stage area.

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The object of the invention is to develop further an installation of the type mentioned at the beginning so that the control of the aids is rationalised.

This object is achieved in accordance with the invention with the installation of the type mentioned at the beginning in that a locating device for locating a relevant position, for instance the position of an actor is provided, which outputs a position signal indicating the relevant position to the control unit and in that the control unit controls the aid or aids in dependence on the position signal.

With the invention one obtains an installation by means of which the aids can be controlled in a particularly rational manner. The position signal outputted by the locating device simplifies the operation of the installation because only a small degree of attentiveness is required by the operator to adjust the control unit according to the situation in the stage area.

So that the control unit controls the aids in dependence on the position signal, control functions determining the interaction can be preset in the device. A control operation is repeatable according to the predetermined control function. With the installation specified by the invention a higher degree of precision can be achieved in the control of the aids according to the respectively predetermined control function than with manual control.

The locating device of the installation according to the invention preferably has fixed radio beacon transmitters to be arranged spaced from one another for transmitting

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radio beacon signals. The fixed radio beacon signals are to be disposed in the performance area. In a further development of this embodiment, the position of the radio beacon transmitter can be inputted into a memory unit of the radio beacon transmitter. Moreover, the positions of the fixed radio beacon transmitters, where appropriate the spacing of the radio beacon transmitters as well as positions and other data relating to other relevant objects in the stage area and/or public area can be stored in a memory unit of the control unit. The radio beacon transmitter transmits a signal containing an item of information on the position of the radio beacon transmitter.

The locating device has a mobile receiver for receiving the radio beacon signals and an output unit which derives the position signal from the received radio beacon signals and outputs it. The fixed radio beacon transmitters are preferably constructed as high-frequency transmitters and the mobile receiver is accordingly constructed as a high-frequency receiver.

To output the position signal to the control unit a mobile transmitter is provided, with which a receiver of the control unit is associated.

The position of the mobile receiver of the radio beacon signals may preferably be determined by means of the radio beacon signals transmitted from the radio beacon transmitters. In one embodiment this determination is performed in accordance with the so-called triangle process or another process which is known to a person skilled in the art for locating systems. The received

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radio beacon signals are placed in relationship or linked with one another.

In a particularly preferred embodiment of the invention, the respective position of each receiver can be determined by means of several receivers, possibly independent of one another, and can be outputted to the control unit.

In accordance with another preferred embodiment of the invention, the fixed radio beacon transmitters transmit the radio beacon signals in the GPS format and the mobile receiver is constructed as a GPS receiver. The GPS receiver is simple and cheap to produce or obtain from commercially available structural elements.

The mobile transmitter is preferably constructed as a high-frequency transmitter and the associated receiver accordingly as a high-frequency receiver. In this embodiment the mobile transmitter can be carried in a particularly simple manner, for instance by an actor, without the freedom of movement of the actor being restricted, for instance by a connecting cable. Moreover, this embodiment does not subject the actor to the restriction of there having to be a free view between transmitter and receiver, as is required in an infrared system, for instance.

The control unit may preferably receive derived position signals from several locating devices and process them.

This embodiment of the invention is quite particularly suitable for performances in which the locating device is provided to determine several relevant positions. The

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In accordance with another particularly preferred embodiment of the invention, the mobile receiver, the output unit and the mobile transmitter are constructed as a portable compact appliance. The portable compact appliance is worn, for instance, on the actor's body or in a pocket in the clothing of the actor.

Moreover, the energy supply can be taken from a common source, such as a battery disposed in the housing of the microphone.

In an alternative embodiment of the invention, a mobile transmitter is provided and fixed receiving beacons are provided to receive the signal transmitted from the

mobile transmitter. The signal transmitted from the mobile transmitter is received by the fixed receiving beacons as a received signal. A position signal with an item of information relating to the position of the mobile transmitter can be determined from the large number of received signals.

Finally a microphone, in particular for use at a public function, with an electroacoustic transducer for receiving an audio signal in a transmitter for transmitting an audio signal, and with a locating device as specified by the invention.

An exemplified embodiment of the invention is explained in further detail below by means of the drawings.

Figure 1 shows as a diagrammatical model a perspective view of a performance area in which aids are disposed, which are actuated by an installation according to the invention;

Figure 2 shows a diagrammatical representation of a longitudinal section through a microphone; and

Figure 3 shows a diagrammatical representation of a mixing console.

The performance area 2 represented in Figure 1 comprises a stage area 4 and a public area 6, which are separated from one another at a boundary surface 7. A left loudspeaker 8 and a right loudspeaker 9 are disposed in the region of the boundary surface 7 in such a manner that they fill the public area 6 in particular with

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Moreover, disposed in the public area 6 is a spotlight 12, which throws a cone of light in a narrow dihedral angle 13 and in particular beams into the stage area 4.

A control unit constructed as a mixing console 20 is disposed in the public area 6 in a region lying opposite the boundary surface 7. The mixing console 20 is connected to an amplifying facility (not represented), which serves to amplify audio signals. The mixing console 20 comprises regulators to regulate the amplitude of amplified audio signals. The left loudspeaker 8, the right loudspeaker 9 and the monitor loudspeaker 10 are connected to the mixing console 20. Amplified and regulated audio signals can be outputted from the mixing console 20 to the loudspeakers 8, 9, 10.

The microphone is detachably fixed to a stand 24 and can be released from the stand 24 by a person in the stage area 4, for instance an actor, and be carried through the



stage area 4. In this case the freedom of movement of the actor carrying the microphone 22 is not restricted by a connecting cable to the amplifying facility; the microphone 22 is in fact equipped with a high-frequency transmitter 34 which transmits an audio signal which is provided to be received by a high-frequency receiver at the amplifying facility.

Disposed in the performance area 2 are four radio beacon transmitters 26, 26', 28, 28' in such a manner that they are spaced in pairs approximately at the maximum distance apart. Additional radio beacon transmitters can be disposed in the performance area 2 in order to increase the efficiency of the locating device. The arrangement of the radio beacon transmitters 26, 26', 28, 28' is fixed at least for the period of a performance. Two radio beacon transmitters 26, 26' are disposed in the stage area 4 opposite the boundary surface 7; two further radio beacon transmitters 28, 28' are disposed in the public area 6 opposite the boundary surface 7. The radio beacon transmitters are connected to the mixing console 20 in order to coordinate the transmitted signals centrally in a suitable manner. The position of the radio beacon transmitters 26, 26', 28, 28' is stored in a memory device of the mixing console 20. The radio beacon transmitters 26, 26', 28, 28' transmit a high-frequency signal in the GPS format, which amongst other things contains an item of information regarding the position of the respective radio beacon transmitter 26, 26', 28, 28'.

The microphone 22 represented in Figure 2 comprises an electroacoustic transducer 23. Disposed in the housing

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A data processing system 36 with a memory unit 38 is disposed in the mixing console 20 represented in Figure 3. The data processing system 36 determines from the position signal - preferably for three dimensions - the positional data of the GPS receiver 30 of the microphone 22. The data processing system 36 performs a control function program stored in the memory unit 38. By using the positional data as parameters, the control function program 36 outputs a first group of control values, which serve to regulate the amplitude of the amplified audio signals delivered by the loudspeakers 8, 9, 10. In accordance with a determined control function program, the amplitude of the audio signal outputted from the left loudspeaker 8 is regulated to be larger than the amplitude of the audio signal outputted from the right loudspeaker 9 when the GPS receiver 30 of the microphone 22 is closer to the left loudspeaker 8 than to the right loudspeaker 9. The amplitude of the audio signal delivered by the monitor loudspeaker 10 is regulated to

be louder if the GPS receiver 30 is removed from the monitor loudspeaker 10. The position of the GPS receiver 30 corresponds to that of the microphone 22 and, for instance, also to the position of the actor because the GPS receiver 30 is disposed in the housing of the microphone 22.

Moreover, the control function program outputs a second group of control values, which serve to actuate the drives (not represented) for the rotation of the spotlight 12 around the vertical and the horizontal axes 14 and 15 respectively. The spotlight 12 is aligned in accordance with a determined control function program so that the centre axis of the dihedral angle 13 of the cone of light intersects the position of the GPS receiver 30 in the housing of the microphone 22 and the actor is illuminated in the cone of light of the spotlight 12.

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